#5

SEQUENCE LISTING

<110> Westphal, Ryan S.
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Ramanathan, Chandra S.
Mintier, Gabriel A.

<120> NUCLEIC ACID MOLECULES AND POLYPEPTIDES FOR A HUMAN CATION CHANNEL POLYPEPTIDE

<130> D0187NP
<140> 10/029,677
<141> 2001-12-21

<150> US 60/257,865
<151> 2000-12-21

<160> 24

<170> PatentIn version 3.0

<210> 1
<211> 2186
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (20)..(2011)

<220>
<221> misc_feature
<222> (2150)..(2150)
<223> wherein "n" equals A, C, G, or T.

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Met Thr Glu Lys Thr Asn Gly Val Lys Ser Ser
1 5 10

cca gcc aat aat cac aac cat cat gca cct cct gcc atc aag gcc aat 100
Pro Ala Asn Asn His Asn His His Ala Pro Pro Ala Ile Lys Ala Asn
15 20 25

ggc aaa gat gac cac agg aca agc agc agg cca cac tct gca gct gac 148
Gly Lys Asp Asp His Arg Thr Ser Ser Arg Pro His Ser Ala Ala Asp
30 35 40

gat gac acc tcc tca gaa ctg cag agg ctg gca gac gtg gat gcc cca 196
Asp Asp Thr Ser Ser Glu Leu Gln Arg Leu Ala Asp Val Asp Ala Pro
45 50 55

cag cag gga agg agt ggc ttc cgc agg ata gtt cgc ctg gtg ggg atc 244
Gln Gln Gly Arg Ser Gly Phe Arg Arg Ile Val Arg Leu Val Gly Ile
60 65 70 75

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atc aga gaa tgg gcc aac aag aat ttc cga gag gag gaa cct agg cct      292
Ile Arg Glu Trp Ala Asn Lys Asn Phe Arg Glu Glu Glu Pro Arg Pro
                80                  85                  90

gac tca ttc ctc gag cgt ttt cgt ggg cct gaa ctc cag act gtg acc      340
Asp Ser Phe Leu Glu Arg Phe Arg Gly Pro Glu Leu Gln Thr Val Thr
            95                  100                 105

aca cag gag ggg gat ggc aaa ggc gac aag gat ggc gag gac aaa ggc      388
Thr Gln Glu Gly Asp Gly Lys Gly Asp Lys Asp Gly Glu Asp Lys Gly
        110                 115                 120

acc aag aag aaa ttt gaa cta ttt gtc ttg gac cca gct ggg gat ttg      436
Thr Lys Lys Lys Phe Glu Leu Phe Val Leu Asp Pro Ala Gly Asp Leu
    125                 130                 135

tac tac tgc tgg cta ttt gtc att gcc atg ccc gtc ctt tac aac tgg      484
Tyr Tyr Cys Trp Leu Phe Val Ile Ala Met Pro Val Leu Tyr Asn Trp
140                 145                 150                 155

tgc ctg ctg gtg gcc aga gcc tgc ttc agt gac cta cag aaa ggc tac      532
Cys Leu Leu Val Ala Arg Ala Cys Phe Ser Asp Leu Gln Lys Gly Tyr
                160                 165                 170

tac ctg gtg tgg ctg gtg ctg gat tat gtc tca gat gtg gtc tac att      580
Tyr Leu Val Trp Leu Val Leu Asp Tyr Val Ser Asp Val Val Tyr Ile
            175                 180                 185

gcg gac ctc ttc atc cga ttg cgc aca ggt ttc ctg gag cag ggg ctg      628
Ala Asp Leu Phe Ile Arg Leu Arg Thr Gly Phe Leu Glu Gln Gly Leu
        190                 195                 200

ctg gtc aaa gat acc aag aaa ctg cga gac aac tac atc cac acc ctg      676
Leu Val Lys Asp Thr Lys Lys Leu Arg Asp Asn Tyr Ile His Thr Leu
    205                 210                 215

cag ttc aag ctg gat gtg gct tcc atc atc ccc act gac ctg atc tat      724
Gln Phe Lys Leu Asp Val Ala Ser Ile Ile Pro Thr Asp Leu Ile Tyr
220                 225                 230                 235

ttt gct gtg gac atc cac agc cct gag gtg cgc ttc aac cgc ctg ctg      772
Phe Ala Val Asp Ile His Ser Pro Glu Val Arg Phe Asn Arg Leu Leu
                240                 245                 250

cac ttt gcc cgc atg ttt gag ttc ttt gac cgg aca gag aca cgc acc      820
His Phe Ala Arg Met Phe Glu Phe Phe Asp Arg Thr Glu Thr Arg Thr
            255                 260                 265

aac tac cct aac atc ttc cgc atc agc aac ctt gtc ctc tac atc ttg      868
Asn Tyr Pro Asn Ile Phe Arg Ile Ser Asn Leu Val Leu Tyr Ile Leu
        270                 275                 280

gtc atc atc cac tgg aat gcc tgc atc tat tat gcc atc tcc aaa tcc      916
Val Ile Ile His Trp Asn Ala Cys Ile Tyr Tyr Ala Ile Ser Lys Ser
    285                 290                 295

ata ggc ttt ggg gtc gac acc tgg gtt tac cca aac atc act gac cct      964
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Ile Gly Phe Gly Val Asp Thr Trp Val Tyr Pro Asn Ile Thr Asp Pro
300                 305                 310                 315

gag tat ggc tac ctg gct agg gaa tac atc tat tgc ctt tac tgg tcc     1012
Glu Tyr Gly Tyr Leu Ala Arg Glu Tyr Ile Tyr Cys Leu Tyr Trp Ser
                320                 325                 330

aca ctg act ctc act acc att ggg gag aca cca ccc cct gta aag gat     1060
Thr Leu Thr Leu Thr Thr Ile Gly Glu Thr Pro Pro Pro Val Lys Asp
            335                 340                 345

gag gag tac cta ttt gtc atc ttt gac ttc ctg att ggc gtc ctc atc     1108
Glu Glu Tyr Leu Phe Val Ile Phe Asp Phe Leu Ile Gly Val Leu Ile
        350                 355                 360

ttt gcc acc atc gtg gga aat gtg ggc tcc atg atc tcc aac atg aat     1156
Phe Ala Thr Ile Val Gly Asn Val Gly Ser Met Ile Ser Asn Met Asn
    365                 370                 375

gcc acc cgg gca gag ttc cag gct aag atc gat gcc gtg aaa cac tac     1204
Ala Thr Arg Ala Glu Phe Gln Ala Lys Ile Asp Ala Val Lys His Tyr
380                 385                 390                 395

atg cag ttc cga aag gtc agc aag ggg atg gaa gcc aag gtc att agg     1252
Met Gln Phe Arg Lys Val Ser Lys Gly Met Glu Ala Lys Val Ile Arg
                400                 405                 410

tgg ttt gac tac ttg tgg acc aat aag aag aca gtg gat gag cga gaa     1300
Trp Phe Asp Tyr Leu Trp Thr Asn Lys Lys Thr Val Asp Glu Arg Glu
            415                 420                 425

att ctc aag aat ctg cca gcc aag ctc agg gct gag ata gcc acc aat     1348
Ile Leu Lys Asn Leu Pro Ala Lys Leu Arg Ala Glu Ile Ala Thr Asn
        430                 435                 440

gtc cac ttg tcc aca ctc aag aaa gtg cgc atc ttc cat gat tgt gag     1396
Val His Leu Ser Thr Leu Lys Lys Val Arg Ile Phe His Asp Cys Glu
    445                 450                 455

gct ggc ctg ctg gta gag ctg gta ctg aaa ctc cgt cct cag gtc ttc     1444
Ala Gly Leu Leu Val Glu Leu Val Leu Lys Leu Arg Pro Gln Val Phe
460                 465                 470                 475

agt cct ggg gat tac att tgc cgc aaa ggg gac atc ggc aag gag atg     1492
Ser Pro Gly Asp Tyr Ile Cys Arg Lys Gly Asp Ile Gly Lys Glu Met
                480                 485                 490

tac atc att aag gag ggc aaa ctg gca gtg gtg gct gat gat ggt gtg     1540
Tyr Ile Ile Lys Glu Gly Lys Leu Ala Val Val Ala Asp Asp Gly Val
            495                 500                 505

act cag tat gct ctg ctg tcg gct gga agc tgc ttt ggc gag atc agt     1588
Thr Gln Tyr Ala Leu Leu Ser Ala Gly Ser Cys Phe Gly Glu Ile Ser
        510                 515                 520

atc ctt aac att aag ggc agt aaa atg ggc aat cga cgc aca gct aat     1636
Ile Leu Asn Ile Lys Gly Ser Lys Met Gly Asn Arg Arg Thr Ala Asn
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    525                 530                 535

atc cgc agc ctg ggc tac tca gat ctc ttc tgc ttg tcc aag gat gat      1684
Ile Arg Ser Leu Gly Tyr Ser Asp Leu Phe Cys Leu Ser Lys Asp Asp
540                 545                 550                 555

ctt atg gaa gct gtg act gag tac cct gat gcc aag aaa gtc cta gaa      1732
Leu Met Glu Ala Val Thr Glu Tyr Pro Asp Ala Lys Lys Val Leu Glu
                560                 565                 570

gag agg ggt cgg gag atc ctc atg aag gag gga ctg ctg gat gag aac      1780
Glu Arg Gly Arg Glu Ile Leu Met Lys Glu Gly Leu Leu Asp Glu Asn
            575                 580                 585

gaa gtg gca acc agc atg gag gtc gac gtg cag gag aag cta ggg cag      1828
Glu Val Ala Thr Ser Met Glu Val Asp Val Gln Glu Lys Leu Gly Gln
        590                 595                 600

ctg gag acc aac atg gaa acc ttg tac act cgc ttt ggc cgc ctg ctg      1876
Leu Glu Thr Asn Met Glu Thr Leu Tyr Thr Arg Phe Gly Arg Leu Leu
    605                 610                 615

gct gag tac acg ggg gcc cag cag aag ctc aag cag cgc atc aca gtt      1924
Ala Glu Tyr Thr Gly Ala Gln Gln Lys Leu Lys Gln Arg Ile Thr Val
620                 625                 630                 635

ctg gaa acc aag atg aaa cag aac aat gaa gat gac tac ctg tct gat      1972
Leu Glu Thr Lys Met Lys Gln Asn Asn Glu Asp Asp Tyr Leu Ser Asp
                640                 645                 650

ggg atg aac agc cct gag ctg gct gct gct gac gag cca taagacctgg      2021
Gly Met Asn Ser Pro Glu Leu Ala Ala Ala Asp Glu Pro
            655                 660

ggcccaactg cctctccagc attggccttg gccttgatcc cagaagctag aggagctatt   2081

tagatctccg gatttacatg cattaccctc atgttccctg aattctccca aaagtctctc   2141

tgaccctgng tttttggcct aaacatccaa gattccgcct cggat                   2186


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<212>  PRT
<213>  Homo sapiens


<400>  2

Met Thr Glu Lys Thr Asn Gly Val Lys Ser Ser Pro Ala Asn Asn His
1               5                   10                  15

Asn His His Ala Pro Pro Ala Ile Lys Ala Asn Gly Lys Asp Asp His
            20                  25                  30
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Arg Thr Ser Ser Arg Pro His Ser Ala Ala Asp Asp Asp Thr Ser Ser
35 40 45

Glu Leu Gln Arg Leu Ala Asp Val Asp Ala Pro Gln Gln Gly Arg Ser
50 55 60

Gly Phe Arg Arg Ile Val Arg Leu Val Gly Ile Ile Arg Glu Trp Ala
65 70 75 80

Asn Lys Asn Phe Arg Glu Glu Glu Pro Arg Pro Asp Ser Phe Leu Glu
85 90 95

Arg Phe Arg Gly Pro Glu Leu Gln Thr Val Thr Thr Gln Glu Gly Asp
100 105 110

Gly Lys Gly Asp Lys Asp Gly Glu Asp Lys Gly Thr Lys Lys Lys Phe
115 120 125

Glu Leu Phe Val Leu Asp Pro Ala Gly Asp Leu Tyr Tyr Cys Trp Leu
130 135 140

Phe Val Ile Ala Met Pro Val Leu Tyr Asn Trp Cys Leu Leu Val Ala
145 150 155 160

Arg Ala Cys Phe Ser Asp Leu Gln Lys Gly Tyr Tyr Leu Val Trp Leu
165 170 175

Val Leu Asp Tyr Val Ser Asp Val Val Tyr Ile Ala Asp Leu Phe Ile
180 185 190

Arg Leu Arg Thr Gly Phe Leu Glu Gln Gly Leu Leu Val Lys Asp Thr
195 200 205

Lys Lys Leu Arg Asp Asn Tyr Ile His Thr Leu Gln Phe Lys Leu Asp
210 215 220

Val Ala Ser Ile Ile Pro Thr Asp Leu Ile Tyr Phe Ala Val Asp Ile
225 230 235 240

His Ser Pro Glu Val Arg Phe Asn Arg Leu Leu His Phe Ala Arg Met
245 250 255

Phe Glu Phe Phe Asp Arg Thr Glu Thr Arg Thr Asn Tyr Pro Asn Ile

260 265 270

Phe Arg Ile Ser Asn Leu Val Leu Tyr Ile Leu Val Ile Ile His Trp
275 280 285

Asn Ala Cys Ile Tyr Tyr Ala Ile Ser Lys Ser Ile Gly Phe Gly Val
290 295 300

Asp Thr Trp Val Tyr Pro Asn Ile Thr Asp Pro Glu Tyr Gly Tyr Leu
305 310 315 320

Ala Arg Glu Tyr Ile Tyr Cys Leu Tyr Trp Ser Thr Leu Thr Leu Thr
325 330 335

Thr Ile Gly Glu Thr Pro Pro Pro Val Lys Asp Glu Glu Tyr Leu Phe
340 345 350

Val Ile Phe Asp Phe Leu Ile Gly Val Leu Ile Phe Ala Thr Ile Val
355 360 365

Gly Asn Val Gly Ser Met Ile Ser Asn Met Asn Ala Thr Arg Ala Glu
370 375 380

Phe Gln Ala Lys Ile Asp Ala Val Lys His Tyr Met Gln Phe Arg Lys
385 390 395 400

Val Ser Lys Gly Met Glu Ala Lys Val Ile Arg Trp Phe Asp Tyr Leu
405 410 415

Trp Thr Asn Lys Lys Thr Val Asp Glu Arg Glu Ile Leu Lys Asn Leu
420 425 430

Pro Ala Lys Leu Arg Ala Glu Ile Ala Thr Asn Val His Leu Ser Thr
435 440 445

Leu Lys Lys Val Arg Ile Phe His Asp Cys Glu Ala Gly Leu Leu Val
450 455 460

Glu Leu Val Leu Lys Leu Arg Pro Gln Val Phe Ser Pro Gly Asp Tyr
465 470 475 480

Ile Cys Arg Lys Gly Asp Ile Gly Lys Glu Met Tyr Ile Ile Lys Glu
485 490 495

Gly Lys Leu Ala Val Val Ala Asp Asp Gly Val Thr Gln Tyr Ala Leu
500 505 510

Leu Ser Ala Gly Ser Cys Phe Gly Glu Ile Ser Ile Leu Asn Ile Lys
515 520 525

Gly Ser Lys Met Gly Asn Arg Arg Thr Ala Asn Ile Arg Ser Leu Gly
530 535 540

Tyr Ser Asp Leu Phe Cys Leu Ser Lys Asp Asp Leu Met Glu Ala Val
545 550 555 560

Thr Glu Tyr Pro Asp Ala Lys Lys Val Leu Glu Glu Arg Gly Arg Glu
565 570 575

Ile Leu Met Lys Glu Gly Leu Leu Asp Glu Asn Glu Val Ala Thr Ser
580 585 590

Met Glu Val Asp Val Gln Glu Lys Leu Gly Gln Leu Glu Thr Asn Met
595 600 605

Glu Thr Leu Tyr Thr Arg Phe Gly Arg Leu Leu Ala Glu Tyr Thr Gly
610 615 620

Ala Gln Gln Lys Leu Lys Gln Arg Ile Thr Val Leu Glu Thr Lys Met
625 630 635 640

Lys Gln Asn Asn Glu Asp Asp Tyr Leu Ser Asp Gly Met Asn Ser Pro
645 650 655

Glu Leu Ala Ala Ala Asp Glu Pro
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<220>
<223> Primer

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cagccaacgc agtctgtact ct 22

<210> 5
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 5
cgggatccga ggcggaatct tggatgttt 29

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<400> 6
agagcctgct tcagtga 17

<210> 7
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<400> 7
tcactgaagc aggctct 17

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ttactggtcc acactga 17

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<400> 9
tcagtgtgga ccagtaa 17

<210> 10
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<212> DNA
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acgcacagct aatatccgca 20

<210> 11
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<400> 11
tgcggatatt agctgtgcgt 20

<210> 12
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<212> DNA
<213> Artificial Sequence

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<223> Primer

<400> 12
tcagagaatg ggccaacaag a 21

<210> 13
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<223> Primer

<400> 13
cgaaaacgct cgaggaatga 20

<210> 14
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<400> 14
caggcctagg ttcctcctct cggaaa 26

<210> 15
<211> 732
<212> PRT
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<400> 15

Met Ser Ser Trp Arg Ser Cys Ala Arg Ala Pro Leu Ser Gly Ser Ala
1 5 10 15

Trp Arg Arg Ser Ala Ala Thr Arg Arg Ser Arg Arg Cys Leu Lys Thr
20 25 30

Lys Arg Lys Arg Trp Ser Ser Gly Lys Gly Thr Pro Met Gln Ser Thr
35 40 45

Gln Cys Glu Thr Arg Arg Arg Ala Gln Thr Pro Cys Glu Ser Thr Gly
50 55 60

His Thr Trp Arg Met Thr Glu Lys Ser Asn Gly Val Lys Ser Ser Pro
65 70 75 80

Ala Asn Asn His Asn Asn His Val Pro Ala Thr Ile Lys Ala Asn Gly
85 90 95

Lys Asp Glu Ser Arg Thr Arg Ser Arg Pro Gln Ser Ala Ala Asp Asp
100 105 110

Asp Thr Ser Ser Glu Leu Gln Arg Leu Ala Glu Met Asp Ala Pro Gln
115 120 125

Gln Arg Arg Gly Gly Phe Arg Arg Ile Val Arg Leu Val Gly Val Ile
130 135 140

Arg Gln Trp Ala Asn Arg Asn Phe Arg Glu Glu Glu Ala Arg Pro Asp
145 150 155 160

Ser Phe Leu Glu Arg Phe Arg Gly Pro Glu Leu Gln Thr Val Thr Thr

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                 165                 170                 175

Gln Gln Gly Asp Gly Lys Gly Asp Lys Asp Gly Asp Gly Lys Gly Thr
            180                 185                 190

Lys Lys Lys Phe Glu Leu Phe Val Leu Asp Pro Ala Gly Asp Trp Tyr
        195                 200                 205

Tyr Arg Trp Leu Phe Val Ile Ala Met Pro Val Leu Tyr Asn Trp Cys
    210                 215                 220

Leu Leu Val Ala Arg Ala Cys Phe Ser Asp Leu Gln Arg Gly Tyr Phe
225                 230                 235                 240

Leu Val Trp Leu Val Leu Asp Tyr Phe Ser Asp Val Val Tyr Ile Ala
                245                 250                 255

Asp Leu Phe Ile Arg Leu Arg Thr Gly Phe Leu Glu Gln Gly Leu Leu
            260                 265                 270

Val Lys Asp Pro Lys Lys Leu Arg Asp Asn Tyr Ile His Thr Leu Gln
        275                 280                 285

Phe Lys Leu Asp Val Ala Ser Ile Ile Pro Thr Asp Leu Ile Tyr Phe
    290                 295                 300

Ala Val Gly Ile His Asn Pro Glu Leu Arg Phe Asn Arg Leu Leu His
305                 310                 315                 320

Phe Ala Arg Met Phe Glu Phe Phe Asp Arg Thr Glu Thr Arg Thr Ser
                325                 330                 335

Tyr Pro Asn Ile Phe Arg Ile Ser Asn Leu Val Leu Tyr Ile Leu Val
            340                 345                 350

Ile Ile His Trp Asn Ala Cys Ile Tyr Tyr Ala Ile Ser Lys Ser Ile
        355                 360                 365

Gly Phe Gly Val Asp Thr Trp Val Tyr Pro Asn Ile Thr Asp Pro Glu
    370                 375                 380

Tyr Gly Tyr Leu Ala Arg Glu Tyr Ile Tyr Cys Leu Tyr Trp Ser Thr
385                 390                 395                 400

Leu Thr Leu Thr Thr Ile Gly Glu Thr Pro Pro Pro Val Lys Asp Glu
                405                 410                 415

Glu Tyr Leu Phe Val Ile Phe Asp Phe Leu Ile Gly Val Leu Ile Phe
            420                 425                 430

Ala Thr Ile Val Gly Asn Val Gly Ser Met Ile Ser Asn Met Asn Ala
        435                 440                 445

Thr Arg Ala Glu Phe Gln Ala Lys Ile Asp Ala Val Lys His Tyr Met
    450                 455                 460

Gln Phe Arg Lys Val Ser Lys Glu Met Glu Ala Lys Val Ile Lys Trp
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465                 470                 475                 480

Phe Asp Tyr Leu Trp Thr Asn Lys Lys Thr Val Asp Glu Arg Glu Val
                485                 490                 495

Leu Lys Asn Leu Pro Ala Lys Leu Arg Ala Glu Ile Ala Ile Asn Val
            500                 505                 510

His Leu Ser Thr Leu Lys Lys Val Arg Ile Phe Gln Asp Cys Glu Ala
        515                 520                 525

Gly Leu Leu Val Glu Leu Val Leu Lys Leu Arg Pro Gln Val Phe Ser
    530                 535                 540

Pro Gly Asp Tyr Ile Cys Arg Lys Gly Asp Ile Gly Lys Glu Met Tyr
545                 550                 555                 560

Ile Ile Lys Glu Gly Lys Leu Ala Val Val Ala Asp Asp Gly Val Thr
                565                 570                 575

Gln Tyr Ala Leu Leu Ser Ala Gly Ser Cys Phe Gly Glu Ile Ser Ile
            580                 585                 590

Leu Asn Ile Lys Gly Ser Lys Met Gly Asn Arg Arg Thr Ala Asn Ile
        595                 600                 605

Arg Ser Leu Gly Tyr Ser Asp Leu Phe Cys Leu Ser Lys Asp Asp Leu
    610                 615                 620

Met Glu Ala Val Thr Glu Tyr Pro Asp Ala Lys Lys Val Leu Glu Glu
625                 630                 635                 640

Arg Gly Arg Glu Ile Leu Met Lys Glu Gly Leu Leu Asp Glu Asn Glu
                645                 650                 655

Val Ala Ala Ser Met Glu Val Asp Val Gln Glu Lys Leu Lys Gln Leu
            660                 665                 670

Glu Thr Asn Met Glu Thr Leu Tyr Thr Arg Phe Gly Arg Leu Leu Ala
        675                 680                 685

Glu Tyr Thr Gly Ala Gln Gln Lys Leu Lys Gln Arg Ile Thr Val Leu
    690                 695                 700

Glu Val Lys Met Lys Gln Asn Thr Glu Asp Asp Tyr Leu Ser Asp Gly
705                 710                 715                 720

Met Asn Ser Pro Glu Pro Ala Ala Ala Glu Gln Pro
                725                 730
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<212> PRT
<213> Bos taurus

<400> 16

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Met Thr Glu Lys Ala Asn Gly Val Lys Ser Ser Pro Ala Asn Asn His
1               5                  10                  15

Asn His His Ala Pro Pro Ala Ile Lys Ala Ser Gly Lys Asp Asp His
            20                  25                  30

Arg Ala Ser Ser Arg Pro Gln Ser Ala Ala Ala Asp Asp Thr Ser Ser
        35                  40                  45

Glu Leu Gln Gln Leu Ala Glu Met Asp Ala Pro Gln Gln Arg Arg Gly
    50                  55                  60

Gly Phe Arg Arg Ile Ala Arg Leu Val Gly Val Leu Arg Glu Trp Ala
65                  70                  75                  80

Tyr Arg Asn Phe Arg Glu Glu Glu Pro Arg Pro Asp Ser Phe Leu Glu
                85                  90                  95

Arg Phe Arg Gly Pro Glu Leu His Thr Val Thr Thr Gln Gln Gly Asp
            100                 105                 110

Gly Lys Gly Asp Lys Asp Gly Glu Gly Lys Gly Thr Lys Lys Lys Phe
        115                 120                 125

Glu Leu Phe Val Leu Asp Pro Ala Gly Asp Trp Tyr Tyr Arg Trp Leu
    130                 135                 140

Phe Leu Ile Ala Leu Pro Val Leu Tyr Asn Trp Cys Leu Leu Val Ala
145                 150                 155                 160

Arg Ala Cys Phe Ser Asp Leu Gln Lys Gly Tyr Tyr Ile Val Trp Leu
                165                 170                 175

Val Leu Asp Tyr Val Ser Asp Val Val Tyr Ile Ala Asp Leu Phe Ile
            180                 185                 190

Arg Leu Arg Thr Gly Phe Leu Glu Gln Gly Leu Leu Val Lys Asp Thr
        195                 200                 205

Lys Lys Leu Arg Asp Asn Tyr Ile His Thr Met Gln Phe Lys Leu Asp
    210                 215                 220

Val Ala Ser Ile Ile Pro Thr Asp Leu Ile Tyr Phe Ala Val Gly Ile
225                 230                 235                 240

His Asn Pro Glu Val Arg Phe Asn Arg Leu Leu His Phe Ala Arg Met
                245                 250                 255

Phe Glu Phe Phe Asp Arg Thr Glu Thr Arg Thr Ser Tyr Pro Asn Ile
            260                 265                 270

Phe Arg Ile Ser Asn Leu Ile Leu Tyr Ile Leu Ile Ile Ile His Trp
        275                 280                 285

Asn Ala Cys Ile Tyr Tyr Ala Ile Ser Lys Ser Ile Gly Phe Gly Val
    290                 295                 300
```

Asp Thr Trp Val Tyr Pro Asn Ile Thr Asp Pro Glu Tyr Gly Tyr Leu
305 310 315 320

Ser Arg Glu Tyr Ile Tyr Cys Leu Tyr Trp Ser Thr Leu Thr Leu Thr
325 330 335

Thr Ile Gly Glu Thr Pro Pro Pro Val Lys Asp Glu Glu Tyr Leu Phe
340 345 350

Val Ile Phe Asp Phe Leu Ile Gly Val Leu Ile Phe Ala Thr Ile Val
355 360 365

Gly Asn Val Gly Ser Met Ile Ser Asn Met Asn Ala Thr Arg Ala Glu
370 375 380

Phe Gln Ala Lys Ile Asp Ala Val Lys His Tyr Met Gln Phe Arg Lys
385 390 395 400

Val Ser Lys Glu Met Glu Ala Lys Val Ile Arg Trp Phe Asp Tyr Leu
405 410 415

Trp Thr Asn Lys Lys Ser Val Asp Glu Arg Glu Val Leu Lys Asn Leu
420 425 430

Pro Ala Lys Leu Arg Ala Glu Ile Ala Ile Asn Val His Leu Ser Thr
435 440 445

Leu Lys Lys Val Arg Ile Phe Gln Asp Cys Glu Ala Gly Leu Leu Val
450 455 460

Glu Leu Val Leu Lys Leu Arg Pro Gln Val Phe Ser Pro Gly Asp Tyr
465 470 475 480

Ile Cys Arg Lys Gly Asp Ile Gly Lys Glu Met Tyr Ile Ile Lys Glu
485 490 495

Gly Lys Leu Ala Val Val Ala Asp Asp Gly Val Thr Gln Tyr Ala Leu
500 505 510

Leu Ser Ala Gly Ser Cys Phe Gly Glu Ile Ser Ile Leu Asn Ile Lys
515 520 525

Gly Ser Lys Met Gly Asn Arg Arg Thr Ala Asn Ile Arg Ser Leu Gly
530 535 540

Tyr Ser Asp Leu Phe Cys Leu Ser Lys Asp Asp Leu Met Glu Ala Val
545 550 555 560

Thr Glu Tyr Pro Asp Ala Lys Arg Val Leu Glu Glu Arg Gly Arg Glu
565 570 575

Ile Leu Met Lys Glu Gly Leu Leu Asp Glu Asn Glu Val Ala Ala Ser
580 585 590

Met Glu Val Asp Val Gln Glu Lys Leu Glu Gln Leu Glu Thr Asn Met
595 600 605

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Asp Thr Leu Tyr Thr Arg Phe Ala Arg Leu Leu Ala Glu Tyr Thr Gly
    610                 615                 620

Ala Gln Gln Lys Leu Lys Gln Arg Ile Thr Val Leu Glu Thr Lys Met
625                 630                 635                 640

Lys Gln Asn Asn Glu Asp Asp Ser Leu Ser Asp Gly Met Asn Ser Pro
                645                 650                 655

Glu Pro Pro Ala Glu Lys Pro
            660
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<210> 17
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<212> PRT
<213> Mus musculus

<400> 17

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Met Met Thr Glu Lys Ser Asn Gly Val Lys Ser Ser Pro Ala Asn Asn
1               5                   10                  15

His Asn His His Pro Pro Pro Ser Ile Lys Ala Asn Gly Lys Asp Asp
            20                  25                  30

His Arg Ala Gly Ser Arg Pro Gln Ser Val Ala Ala Asp Asp Asp Thr
        35                  40                  45

Ser Ser Glu Leu Gln Arg Leu Ala Glu Met Asp Thr Pro Arg Arg Gly
    50                  55                  60

Arg Gly Gly Phe Arg Arg Ile Val Arg Leu Val Gly Ile Ile Arg Asp
65                  70                  75                  80

Trp Ala Asn Lys Asn Phe Arg Glu Glu Glu Pro Arg Pro Asp Ser Phe
                85                  90                  95

Leu Glu Arg Phe Arg Gly Pro Glu Leu Gln Thr Val Thr Pro His Gln
            100                 105                 110

Gly Asp Gly Lys Gly Asp Lys Asp Gly Glu Gly Lys Gly Thr Lys Lys
        115                 120                 125

Lys Phe Glu Leu Phe Val Leu Asp Pro Ala Gly Asp Trp Tyr Tyr Arg
    130                 135                 140

Trp Leu Phe Val Ile Ala Met Pro Val Leu Tyr Asn Trp Cys Leu Leu
145                 150                 155                 160

Val Ala Arg Ala Cys Phe Ser Asp Leu Gln Arg Asn Tyr Phe Val Val
                165                 170                 175

Trp Leu Val Leu Asp Tyr Phe Ser Asp Thr Val Tyr Ile Ala Asp Leu
            180                 185                 190

Ile Ile Arg Leu Arg Thr Gly Phe Leu Glu Gln Gly Leu Leu Val Lys
        195                 200                 205
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```
Asp Pro Lys Lys Leu Arg Asp Asn Tyr Ile His Thr Leu Gln Phe Lys
    210                 215                 220

Leu Asp Val Ala Ser Ile Ile Pro Thr Asp Leu Ile Tyr Phe Ala Val
225                 230                 235                 240

Gly Ile His Ser Pro Glu Val Arg Phe Asn Arg Leu Leu His Phe Ala
                245                 250                 255

Arg Met Phe Glu Phe Phe Asp Arg Thr Glu Thr Arg Thr Ser Tyr Pro
            260                 265                 270

Asn Ile Phe Arg Ile Ser Asn Leu Val Leu Tyr Ile Leu Val Ile Ile
        275                 280                 285

His Trp Asn Ala Cys Ile Tyr Tyr Ala Ile Ser Lys Ser Ile Gly Phe
    290                 295                 300

Gly Val Asp Thr Trp Val Tyr Pro Asn Ile Thr Asp Pro Glu Tyr Gly
305                 310                 315                 320

Tyr Leu Ala Arg Glu Tyr Ile Tyr Cys Leu Tyr Trp Ser Thr Leu Thr
                325                 330                 335

Leu Thr Thr Ile Gly Glu Thr Pro Pro Pro Val Lys Asp Glu Glu Tyr
            340                 345                 350

Leu Phe Phe Ile Phe Asp Phe Leu Ile Gly Val Leu Ile Phe Ala Thr
        355                 360                 365

Ile Val Gly Asn Val Gly Ser Met Ile Ser Asn Met Asn Ala Thr Arg
    370                 375                 380

Ala Glu Phe Gln Ala Lys Ile Asp Ala Val Lys His Tyr Met Gln Phe
385                 390                 395                 400

Arg Lys Val Ser Lys Asp Met Glu Ala Lys Val Ile Lys Trp Phe Asp
                405                 410                 415

Tyr Leu Trp Thr Asn Lys Lys Thr Val Asp Glu Arg Glu Val Leu Lys
            420                 425                 430

Asn Leu Pro Ala Lys Leu Arg Ala Glu Ile Ala Ile Asn Val His Leu
        435                 440                 445

Ser Thr Leu Lys Lys Val Arg Ile Phe Gln Asp Cys Glu Ala Gly Leu
    450                 455                 460

Leu Val Glu Leu Val Leu Lys Leu Arg Pro Gln Val Phe Ser Pro Gly
465                 470                 475                 480

Asp Tyr Ile Cys Arg Lys Gly Asp Ile Gly Lys Glu Met Tyr Ile Ile
                485                 490                 495

Lys Glu Gly Lys Leu Ala Val Val Ala Asp Asp Gly Val Thr Gln Tyr
            500                 505                 510
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Ala Leu Leu Ser Ala Gly Ser Cys Phe Gly Glu Ile Ser Ile Leu Asn
        515                 520                 525

Ile Lys Gly Ser Lys Met Gly Asn Arg Arg Thr Gly Thr Ile Arg Ser
    530                 535                 540

Leu Gly Tyr Ser Asp Leu Phe Cys Leu Ser Lys Asp Asp Leu Met Glu
545                 550                 555                 560

Ala Val Thr Glu Tyr Pro Asp Ala Lys Lys Val Leu Glu Glu Arg Gly
                565                 570                 575

Arg Glu Ile Leu Met Lys Glu Gly Leu Leu Asp Glu Asn Glu Val Ala
            580                 585                 590

Ala Ser Met Glu Val Asp Val Gln Glu Lys Leu Glu Gln Leu Glu Thr
        595                 600                 605

Asn Met Glu Thr Leu Tyr Thr Arg Phe Ala Arg Leu Leu Ala Glu Tyr
    610                 615                 620

Thr Gly Ala Gln Gln Lys Leu Lys Gln Arg Ile Thr Val Leu Glu Thr
625                 630                 635                 640

Lys Met Lys Gln Asn His Glu Asp Asp Tyr Leu Ser Asp Gly Ile Asn
                645                 650                 655

Thr Pro Glu Pro Ala Val Ala Glu
            660
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<210> 18
<211> 664
<212> PRT
<213> Rattus norvegicus

<400> 18

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Met Met Thr Glu Lys Ser Asn Gly Val Lys Ser Ser Pro Ala Asn Asn
1               5                   10                  15

His Asn His His Pro Pro Pro Ser Ile Lys Ala Asn Gly Lys Asp Asp
            20                  25                  30

His Arg Ala Gly Ser Arg Pro Gln Ser Val Ala Ala Asp Asp Asp Thr
        35                  40                  45

Ser Pro Glu Leu Gln Arg Leu Ala Glu Met Asp Thr Pro Arg Arg Gly
    50                  55                  60

Arg Gly Gly Phe Gln Arg Ile Val Arg Leu Val Gly Val Ile Arg Asp
65                  70                  75                  80

Trp Ala Asn Lys Asn Phe Arg Glu Glu Glu Pro Arg Pro Asp Ser Phe
                85                  90                  95

Leu Glu Arg Phe Arg Gly Pro Glu Leu Gln Thr Val Thr Thr His Gln
```

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           100                 105                 110

Gly Asp Asp Lys Gly Gly Lys Asp Gly Glu Gly Lys Gly Thr Lys Lys
        115                 120                 125

Lys Phe Glu Leu Phe Val Leu Asp Pro Ala Gly Asp Trp Tyr Tyr Arg
    130                 135                 140

Trp Leu Phe Val Ile Ala Met Pro Val Leu Tyr Asn Trp Cys Leu Leu
145                 150                 155                 160

Val Ala Arg Ala Cys Phe Ser Asp Leu Gln Arg Asn Tyr Phe Val Val
                165                 170                 175

Trp Leu Val Leu Asp Tyr Phe Ser Asp Thr Val Tyr Ile Ala Asp Leu
            180                 185                 190

Ile Ile Arg Leu Arg Thr Gly Phe Leu Glu Gln Gly Leu Leu Val Lys
        195                 200                 205

Asp Pro Lys Lys Leu Arg Asp Asn Tyr Ile His Thr Leu Gln Phe Lys
    210                 215                 220

Leu Asp Val Ala Ser Ile Ile Pro Thr Asp Leu Ile Tyr Phe Ala Val
225                 230                 235                 240

Gly Ile His Ser Pro Glu Val Arg Phe Asn Arg Leu Leu His Phe Ala
                245                 250                 255

Arg Met Phe Glu Phe Phe Asp Arg Thr Glu Thr Arg Thr Ser Tyr Pro
            260                 265                 270

Asn Ile Phe Arg Ile Ser Asn Leu Val Leu Tyr Ile Leu Val Ile Ile
        275                 280                 285

His Trp Asn Ala Cys Ile Tyr Tyr Val Ile Ser Lys Ser Ile Gly Phe
    290                 295                 300

Gly Val Asp Thr Trp Val Tyr Pro Asn Ile Thr Asp Pro Glu Tyr Gly
305                 310                 315                 320

Tyr Leu Ala Arg Glu Tyr Ile Tyr Cys Leu Tyr Trp Ser Thr Leu Thr
                325                 330                 335

Leu Thr Thr Ile Gly Glu Thr Pro Pro Pro Val Lys Asp Glu Glu Tyr
            340                 345                 350

Leu Phe Val Ile Phe Asp Phe Leu Ile Gly Val Leu Ile Phe Ala Thr
        355                 360                 365

Ile Val Gly Asn Val Gly Ser Met Ile Ser Asn Met Asn Ala Thr Arg
    370                 375                 380

Ala Glu Phe Gln Ala Lys Ile Asp Ala Val Lys His Tyr Met Gln Phe
385                 390                 395                 400

Arg Lys Val Ser Lys Asp Met Glu Ala Lys Val Ile Lys Trp Phe Asp
```

405 410 415

Tyr Leu Trp Thr Asn Lys Lys Thr Val Asp Glu Arg Glu Val Leu Lys
420 425 430

Asn Leu Pro Ala Lys Leu Arg Ala Glu Ile Ala Ile Asn Val His Leu
435 440 445

Ser Thr Leu Lys Lys Val Arg Ile Phe Gln Asp Cys Glu Ala Gly Leu
450 455 460

Leu Val Glu Leu Val Leu Lys Leu Arg Pro Gln Val Phe Ser Pro Gly
465 470 475 480

Asp Tyr Ile Cys Arg Lys Gly Asp Ile Gly Lys Glu Met Tyr Ile Ile
485 490 495

Lys Glu Gly Lys Leu Ala Val Val Ala Asp Asp Gly Val Thr Gln Tyr
500 505 510

Ala Leu Leu Ser Ala Gly Ser Cys Phe Gly Glu Ile Ser Ile Leu Asn
515 520 525

Ile Lys Gly Ser Lys Met Gly Asn Arg Arg Thr Ala Asn Ile Arg Ser
530 535 540

Leu Gly Tyr Ser Asp Leu Phe Cys Leu Ser Lys Asp Asp Leu Met Glu
545 550 555 560

Ala Val Thr Glu Tyr Pro Asp Ala Lys Lys Val Leu Glu Glu Arg Gly
565 570 575

Arg Glu Ile Leu Met Lys Glu Gly Leu Leu Asp Glu Asn Glu Val Ala
580 585 590

Ala Ser Met Glu Val Asp Val Gln Glu Lys Leu Glu Gln Leu Glu Thr
595 600 605

Asn Met Asp Thr Leu Tyr Thr Arg Phe Ala Arg Leu Leu Ala Glu Tyr
610 615 620

Thr Gly Ala Gln Gln Lys Leu Lys Gln Arg Ile Thr Val Leu Glu Thr
625 630 635 640

Lys Met Lys Gln Asn His Glu Asp Asp Tyr Leu Ser Asp Gly Ile Asn
645 650 655

Thr Pro Glu Pro Thr Ala Ala Glu
660

<210> 19
<211> 39
<212> DNA
<213> Homo sapiens

<400> 19
gcagcagcgg ccgctactac tgctggctat ttgtcattg

<210> 20
<211> 36
<212> DNA
<213> Homo sapiens

<400> 20
gcagcagtcg actggctcgt cagcagcagc cagctc 36

<210> 21
<211> 38
<212> DNA
<213> Homo sapiens

<400> 21
gcagcagcgg ccgcatgacc gaaaaaacca atggtgtg 38

<210> 22
<211> 36
<212> DNA
<213> Homo sapiens

<400> 22
gcagcagtcg acgaagacct gaggacggag tttcag 36

<210> 23
<211> 2190
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (20)..(2011)

<400> 23
ctctagatgt acatggagg atg acc gaa aaa acc aat ggt gtg aag agc tcc 52
Met Thr Glu Lys Thr Asn Gly Val Lys Ser Ser
1 5 10

cca gcc aat aat cac aac cat cat gca cct cct gcc atc aag gcc aat 100
Pro Ala Asn Asn His Asn His His Ala Pro Pro Ala Ile Lys Ala Asn
15 20 25

ggc aaa gat gac cac agg aca agc agc agg cca cac tct gca gct gac 148
Gly Lys Asp Asp His Arg Thr Ser Ser Arg Pro His Ser Ala Ala Asp
30 35 40

gat gac acc tcc tca gaa ctg cag agg ctg gca gac gtg gat gcc cca 196
Asp Asp Thr Ser Ser Glu Leu Gln Arg Leu Ala Asp Val Asp Ala Pro
45 50 55

cag cag gga agg agt ggc ttc cgc agg ata gtt cgc ctg gtg ggg atc 244
Gln Gln Gly Arg Ser Gly Phe Arg Arg Ile Val Arg Leu Val Gly Ile

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60                  65                  70                  75

atc aga gaa tgg gcc aac aag aat ttc cga gag gag gaa cct agg cct      292
Ile Arg Glu Trp Ala Asn Lys Asn Phe Arg Glu Glu Glu Pro Arg Pro
                80                  85                  90

gac tca ttc ctc gag cgt ttt cgt ggg cct gaa ctc cag act gtg acc      340
Asp Ser Phe Leu Glu Arg Phe Arg Gly Pro Glu Leu Gln Thr Val Thr
            95                  100                 105

aca cag gag ggg gat ggc aaa ggc gac aag gat ggc gag gac aaa ggc      388
Thr Gln Glu Gly Asp Gly Lys Gly Asp Lys Asp Gly Glu Asp Lys Gly
        110                 115                 120

acc aag aag aaa ttt gaa cta ttt gtc ttg gac cca gct ggg gat ttg      436
Thr Lys Lys Lys Phe Glu Leu Phe Val Leu Asp Pro Ala Gly Asp Leu
    125                 130                 135

tac tac tgc tgg cta ttt gtc att gcc atg ccc gtc ctt tac aac tgg      484
Tyr Tyr Cys Trp Leu Phe Val Ile Ala Met Pro Val Leu Tyr Asn Trp
140                 145                 150                 155

tgc ctg ctg gtg gcc aga gcc tgc ttc agt gac cta cag aaa ggc tac      532
Cys Leu Leu Val Ala Arg Ala Cys Phe Ser Asp Leu Gln Lys Gly Tyr
                160                 165                 170

tac ctg gtg tgg ctg gtg ctg gat tat gtc tca gat gtg gtc tac att      580
Tyr Leu Val Trp Leu Val Leu Asp Tyr Val Ser Asp Val Val Tyr Ile
            175                 180                 185

gcg gac ctc ttc atc cga ttg cgc aca ggt ttc ctg gag cag ggg ctg      628
Ala Asp Leu Phe Ile Arg Leu Arg Thr Gly Phe Leu Glu Gln Gly Leu
        190                 195                 200

ctg gtc aaa gat acc aag aaa ctg cga gac aac tac atc cac acc ctg      676
Leu Val Lys Asp Thr Lys Lys Leu Arg Asp Asn Tyr Ile His Thr Leu
    205                 210                 215

cag ttc aag ctg gat gtg gct tcc atc atc ccc act gac ctg atc tat      724
Gln Phe Lys Leu Asp Val Ala Ser Ile Ile Pro Thr Asp Leu Ile Tyr
220                 225                 230                 235

ttt gct gtg gac atc cac agc cct gag gtg cgc ttc aac cgc ctg ctg      772
Phe Ala Val Asp Ile His Ser Pro Glu Val Arg Phe Asn Arg Leu Leu
                240                 245                 250

cac ttt gcc cgc atg ttt gag ttc ttt gac cgg aca gag aca cgc acc      820
His Phe Ala Arg Met Phe Glu Phe Phe Asp Arg Thr Glu Thr Arg Thr
            255                 260                 265

aac tac cct aac atc ttc cgc atc agc aac ctt gtc ctc tac atc ttg      868
Asn Tyr Pro Asn Ile Phe Arg Ile Ser Asn Leu Val Leu Tyr Ile Leu
        270                 275                 280

gtc atc atc cac tgg aat gcc tgc atc tat tat gcc atc tcc aaa tcc      916
Val Ile Ile His Trp Asn Ala Cys Ile Tyr Tyr Ala Ile Ser Lys Ser
    285                 290                 295
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ata ggc ttt ggg gtc gac acc tgg gtt tac cca aac atc act gac cct      964
Ile Gly Phe Gly Val Asp Thr Trp Val Tyr Pro Asn Ile Thr Asp Pro
300                 305                 310                 315

gag tat ggc tac ctg gct agg gaa tac atc tat tgc ctt tac tgg tcc     1012
Glu Tyr Gly Tyr Leu Ala Arg Glu Tyr Ile Tyr Cys Leu Tyr Trp Ser
                320                 325                 330

aca ctg act ctc act acc att ggg gag aca cca ccc cct gta aag gat     1060
Thr Leu Thr Leu Thr Thr Ile Gly Glu Thr Pro Pro Pro Val Lys Asp
            335                 340                 345

gag gag tac cta ttt gtc atc ttt gac ttc ctg att ggc gtc ctc atc     1108
Glu Glu Tyr Leu Phe Val Ile Phe Asp Phe Leu Ile Gly Val Leu Ile
        350                 355                 360

ttt gcc acc atc gtg gga aat gtg ggc tcc atg atc tcc aac atg aat     1156
Phe Ala Thr Ile Val Gly Asn Val Gly Ser Met Ile Ser Asn Met Asn
    365                 370                 375

gcc acc cgg gca gag ttc cag gct aag atc gat gcc gtg aaa cac tac     1204
Ala Thr Arg Ala Glu Phe Gln Ala Lys Ile Asp Ala Val Lys His Tyr
380                 385                 390                 395

atg cag ttc cga aag gtc agc aag ggg atg gaa gcc aag gtc att agg     1252
Met Gln Phe Arg Lys Val Ser Lys Gly Met Glu Ala Lys Val Ile Arg
                400                 405                 410

tgg ttt gac tac ttg tgg acc aat aag aag aca gtg gat gag cga gaa     1300
Trp Phe Asp Tyr Leu Trp Thr Asn Lys Lys Thr Val Asp Glu Arg Glu
            415                 420                 425

att ctc aag aat ctg cca gcc aag ctc agg gct gag ata gcc atc aat     1348
Ile Leu Lys Asn Leu Pro Ala Lys Leu Arg Ala Glu Ile Ala Ile Asn
        430                 435                 440

gtc cac ttg tcc aca ctc aag aaa gtg cgc atc ttc cat gat tgt gag     1396
Val His Leu Ser Thr Leu Lys Lys Val Arg Ile Phe His Asp Cys Glu
    445                 450                 455

gct ggc ctg ctg gta gag ctg gta ctg aaa ctc cgt cct cag gtc ttc     1444
Ala Gly Leu Leu Val Glu Leu Val Leu Lys Leu Arg Pro Gln Val Phe
460                 465                 470                 475

agt cct ggg gat tac att tgc cgc aaa ggg gac atc ggc aag gag atg     1492
Ser Pro Gly Asp Tyr Ile Cys Arg Lys Gly Asp Ile Gly Lys Glu Met
                480                 485                 490

tac atc att aag gag ggc aaa ctg gca gtg gtg gct gat gat ggt gtg     1540
Tyr Ile Ile Lys Glu Gly Lys Leu Ala Val Val Ala Asp Asp Gly Val
            495                 500                 505

act cag tat gct ctg ctg tcg gct gga agc tgc ttt ggc gag atc agt     1588
Thr Gln Tyr Ala Leu Leu Ser Ala Gly Ser Cys Phe Gly Glu Ile Ser
        510                 515                 520
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atc ctt aac att aag ggc agt aaa atg ggc aat cga cgc aca gct aat     1636
Ile Leu Asn Ile Lys Gly Ser Lys Met Gly Asn Arg Arg Thr Ala Asn
    525                 530                 535

atc cgc agc ctg ggc tac tca gat ctc ttc tgc ttg tcc aag gat gat     1684
Ile Arg Ser Leu Gly Tyr Ser Asp Leu Phe Cys Leu Ser Lys Asp Asp
540                 545                 550                 555

ctt atg gaa gct gtg act gag tac cct gat gcc aag aaa gtc cta gaa     1732
Leu Met Glu Ala Val Thr Glu Tyr Pro Asp Ala Lys Lys Val Leu Glu
                560                 565                 570

gag agg ggt cgg gag atc ctc atg aag gag gga ctg ctg gat gag aac     1780
Glu Arg Gly Arg Glu Ile Leu Met Lys Glu Gly Leu Leu Asp Glu Asn
            575                 580                 585

gaa gtg gca acc agc atg gag gtc gac gtg cag gag aag cta ggg cag     1828
Glu Val Ala Thr Ser Met Glu Val Asp Val Gln Glu Lys Leu Gly Gln
        590                 595                 600

ctg gag acc aac atg gaa acc ttg tac act cgc ttt ggc cgc ctg ctg     1876
Leu Glu Thr Asn Met Glu Thr Leu Tyr Thr Arg Phe Gly Arg Leu Leu
    605                 610                 615

gct gag tac acg ggg gcc cag cag aag ctc aag cag cgc atc aca gtt     1924
Ala Glu Tyr Thr Gly Ala Gln Gln Lys Leu Lys Gln Arg Ile Thr Val
620                 625                 630                 635

ctg gaa acc aag atg aaa cag aac aat gaa gat gac tac ctg tct gat     1972
Leu Glu Thr Lys Met Lys Gln Asn Asn Glu Asp Asp Tyr Leu Ser Asp
                640                 645                 650

ggg atg aac agc cct gag ctg gct gct gct gac gag cca taagacctgg      2021
Gly Met Asn Ser Pro Glu Leu Ala Ala Ala Asp Glu Pro
            655                 660

ggcccaactg cctctccagc attggccttg gccttgatcc cagaagctag aggagctatt   2081

tagatctccg gatttacatg cattaccctc atgttccctg aattctccca aaagcctctc   2141

tgaccctggg tttttggcct aaacatccaa gattccgcct cggatcccg               2190
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<210> 24
<211> 664
<212> PRT
<213> Homo sapiens

<400> 24

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Met Thr Glu Lys Thr Asn Gly Val Lys Ser Ser Pro Ala Asn Asn His
1               5                   10                  15

Asn His His Ala Pro Pro Ala Ile Lys Ala Asn Gly Lys Asp Asp His
            20                  25                  30
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Arg Thr Ser Ser Arg Pro His Ser Ala Ala Asp Asp Asp Thr Ser Ser
35 40 45

Glu Leu Gln Arg Leu Ala Asp Val Asp Ala Pro Gln Gln Gly Arg Ser
50 55 60

Gly Phe Arg Arg Ile Val Arg Leu Val Gly Ile Ile Arg Glu Trp Ala
65 70 75 80

Asn Lys Asn Phe Arg Glu Glu Glu Pro Arg Pro Asp Ser Phe Leu Glu
85 90 95

Arg Phe Arg Gly Pro Glu Leu Gln Thr Val Thr Thr Gln Glu Gly Asp
100 105 110

Gly Lys Gly Asp Lys Asp Gly Glu Asp Lys Gly Thr Lys Lys Lys Phe
115 120 125

Glu Leu Phe Val Leu Asp Pro Ala Gly Asp Leu Tyr Tyr Cys Trp Leu
130 135 140

Phe Val Ile Ala Met Pro Val Leu Tyr Asn Trp Cys Leu Leu Val Ala
145 150 155 160

Arg Ala Cys Phe Ser Asp Leu Gln Lys Gly Tyr Tyr Leu Val Trp Leu
165 170 175

Val Leu Asp Tyr Val Ser Asp Val Val Tyr Ile Ala Asp Leu Phe Ile
180 185 190

Arg Leu Arg Thr Gly Phe Leu Glu Gln Gly Leu Leu Val Lys Asp Thr
195 200 205

Lys Lys Leu Arg Asp Asn Tyr Ile His Thr Leu Gln Phe Lys Leu Asp
210 215 220

Val Ala Ser Ile Ile Pro Thr Asp Leu Ile Tyr Phe Ala Val Asp Ile
225 230 235 240

His Ser Pro Glu Val Arg Phe Asn Arg Leu Leu His Phe Ala Arg Met
245 250 255

Phe Glu Phe Phe Asp Arg Thr Glu Thr Arg Thr Asn Tyr Pro Asn Ile
260 265 270

Phe Arg Ile Ser Asn Leu Val Leu Tyr Ile Leu Val Ile Ile His Trp
275 280 285

Asn Ala Cys Ile Tyr Tyr Ala Ile Ser Lys Ser Ile Gly Phe Gly Val
290 295 300

Asp Thr Trp Val Tyr Pro Asn Ile Thr Asp Pro Glu Tyr Gly Tyr Leu
305 310 315 320

Ala Arg Glu Tyr Ile Tyr Cys Leu Tyr Trp Ser Thr Leu Thr Leu Thr
325 330 335

Thr Ile Gly Glu Thr Pro Pro Pro Val Lys Asp Glu Glu Tyr Leu Phe
340 345 350

Val Ile Phe Asp Phe Leu Ile Gly Val Leu Ile Phe Ala Thr Ile Val
355 360 365

Gly Asn Val Gly Ser Met Ile Ser Asn Met Asn Ala Thr Arg Ala Glu
370 375 380

Phe Gln Ala Lys Ile Asp Ala Val Lys His Tyr Met Gln Phe Arg Lys
385 390 395 400

Val Ser Lys Gly Met Glu Ala Lys Val Ile Arg Trp Phe Asp Tyr Leu
405 410 415

Trp Thr Asn Lys Lys Thr Val Asp Glu Arg Glu Ile Leu Lys Asn Leu
420 425 430

Pro Ala Lys Leu Arg Ala Glu Ile Ala Ile Asn Val His Leu Ser Thr
435 440 445

Leu Lys Lys Val Arg Ile Phe His Asp Cys Glu Ala Gly Leu Leu Val
450 455 460

Glu Leu Val Leu Lys Leu Arg Pro Gln Val Phe Ser Pro Gly Asp Tyr
465 470 475 480

Ile Cys Arg Lys Gly Asp Ile Gly Lys Glu Met Tyr Ile Ile Lys Glu

485 490 495

Gly Lys Leu Ala Val Val Ala Asp Asp Gly Val Thr Gln Tyr Ala Leu
500 505 510

Leu Ser Ala Gly Ser Cys Phe Gly Glu Ile Ser Ile Leu Asn Ile Lys
515 520 525

Gly Ser Lys Met Gly Asn Arg Arg Thr Ala Asn Ile Arg Ser Leu Gly
530 535 540

Tyr Ser Asp Leu Phe Cys Leu Ser Lys Asp Asp Leu Met Glu Ala Val
545 550 555 560

Thr Glu Tyr Pro Asp Ala Lys Lys Val Leu Glu Glu Arg Gly Arg Glu
565 570 575

Ile Leu Met Lys Glu Gly Leu Leu Asp Glu Asn Glu Val Ala Thr Ser
580 585 590

Met Glu Val Asp Val Gln Glu Lys Leu Gly Gln Leu Glu Thr Asn Met
595 600 605

Glu Thr Leu Tyr Thr Arg Phe Gly Arg Leu Leu Ala Glu Tyr Thr Gly
610 615 620

Ala Gln Gln Lys Leu Lys Gln Arg Ile Thr Val Leu Glu Thr Lys Met
625 630 635 640

Lys Gln Asn Asn Glu Asp Asp Tyr Leu Ser Asp Gly Met Asn Ser Pro
645 650 655

Glu Leu Ala Ala Ala Asp Glu Pro
660